In the Claims

1. (currently amended) A method for producing polyhydroxyalkanoates comprising providing ~~genetically engineered~~ organisms which express enzymes selected from the group consisting of ~~diol oxidoreductase, aldehyde dehydrogenase,~~ acyl-CoA transferase, acyl-CoA synthetase, β-ketothiolase, acetoacetyl-CoA reductase, and PHA synthase,

~~providing diols which can be converted into hydroxyalkanoate monomers by enzymes expressed by in the organisms,~~ wherein

the organisms are ~~transformed with genes encoding enzymes~~ genetically engineered to express genes that encode enzymes selected from the group consisting of diol oxidoreductase and aldehyde dehydrogenase, wherein

diol oxidoreductase and aldehyde dehydrogenase convert ~~1,4 butanediol~~ diols into hydroxyalkanoate monomers, wherein the monomers are selected from the group consisting of 4-hydroxybutyrate, 2-hydroxybutyrate, 4-hydroxyvalerate, 5-hydroxyvalerate, 6-hydroxyhexanoate, 2-hydroxyethanoate, 2-hydroxypropionate, and 3-hydroxyhexanoate, having a weight-average molecular weight (Mw) of at least 300,000, and

~~culturing the organisms under conditions wherein the hydroxyalkanoate~~ monomers are polymerized to form polyhydroxyalkanoates having a weight average molecular weight (Mw) of at least 300,000.

2. (original) The method of claim 1 wherein the diol is 1,6-hexanediol and the hydroxyalkanoate monomer is 6-hydroxyhexanoate.

3. (original) The method of claim 1 wherein the diol is 1,5-pentanediol and the hydroxyalkanoate monomer is 5-hydroxyvalcrate.

4. (currently amended) The method of claim 1 wherein the diol is 1,4-butanediol and the hydroxyalkanoate monomer is 4-hydroxybutyrate.

5. (canceled)

6. (currently amended) The method of claim 1 wherein the diol is 1,2-ethanediol and the hydroxyalkanoate monomer is 2-hydroxyethanoate.

7. (currently amended) The method of claim 1 wherein the diol is 1,2-propanediol and the hydroxyalkanoate monomer is 2-hydroxypropionate.

8. (original) A genetically engineered organism for use in the method of claim 1 comprising an organism which expresses the *aldH* and *dhaT* genes.

9. (original) The organism of claim 8 wherein the organism is selected from the group consisting of *Escherichia coli*, *Ralstonia eutropha*, *Klebsiella* spp., *Alcaligenes latus*, *Azotobacter* spp., and *Comamonas* spp.

10. (currently amended) A system for making polyhydroxyalkanoates comprising an organism ~~genetically engineered to~~ that expresses ~~express~~ genes that encode enzymes selected from the group consisting of a ~~diol oxidoreductase, aldehyde dehydrogenase,~~ acyl-CoA transferase, acyl-CoA synthetase, β-ketothiolase, acetoacetyl-CoA reductase, and PHA synthase,

wherein the organism is ~~transformed with genes encoding~~ genetically engineered to express genes that encode enzymes selected from the group consisting of diol oxidoreductase and aldehyde dehydrogenase, ~~and~~

wherein the organism can convert diols into hydroxyalkanoate monomers which are polymerized to form polyhydroxyalkanoates having a weight-average molecular weight (Mw) of at least 300,000, wherein the monomers are selected from the group consisting of 4-hydroxybutyrate, 2-hydroxybutyrate, 4-hydroxyvalerate, 5-hydroxyvalerate, 6-hydroxyhexanoate, 2-hydroxyethanoate, 2-hydroxypropionate, and 3-hydroxyhexanoate.

11-21. (canceled)

22. (new) A polyhydroxyalkanoate comprising 2-hydroxypropionate and at least one co-monomer selected from the group consisting of 4-hydroxybutyrate, 3-hydroxypropionate, 2-hydroxybutyrate, 4-hydroxyvalerate, 5-hydroxyvalerate, 6-hydroxyhexanoate, 2-hydroxyethanoate, 2-hydroxyproionate, and 3-hydroxyhexanoate, wherein the polyhydroxyalkanoate has a weight-average molecular weight (Mw) of at least 300,000.

23. (new) A polyhydroxyalkanoate comprising 2-hydroxyethanoate and at least one co-monomer selected from the group consisting of 4-hydroxybutyrate, 3-hydroxypropionate, 2-hydroxybutyrate, 4-hydroxyvalerate, 5-hydroxyvalerate, 6-hydroxyhexanoate, 2-hydroxyethanoate, 2-hydroxyproionate, and 3-hydroxyhexanoate, wherein the polyhydroxyalkanoate has a weight-average molecular weight (Mw) of at least 300,000.